

Claims

- [c1] 1. A color filter, comprising:
a refractive lens array for receiving and focusing diverging color components of light and a holographic grating for aligning the color components of light along distinct, non-diverging paths.
- [c2] 2. The filter of claim 1 in which the holographic grating aligns the distinct color components of light to be normal to a selected plane.
- [c3] 3. The filter of claim 2 in which the selected plane corresponds to an electronic display panel.
- [c4] 4. The filter of claim 1 in which the lens array includes an array of cylindrical lenses.
- [c5] 5. The filter of claim 1 in which the holographic grating is continuous and without optical power.
- [c6] 6. The filter of claim 1 in which the holographic grating includes a volume hologram.
- [c7] 7. The filter of claim 1 further comprising a color divergence element that provides the diverging color components of light to the refractive lens array.
- [c8] 8. The filter of claim 7 in which the color divergence element includes plural angularly inclined dichroic mirrors for providing color separation of incident multi-color illumination light.
- [c9] 9. The filter of claim 7 in which the color divergence element includes a holographic grating for providing color separation of incident multi-color illumination light.
- [c10] 10. The filter of claim 9 in which the holographic grating of the color divergence element is substantially the same as the holographic grating for aligning the color components of light.
- [c11] 11. The filter of claim 1 in which the holographic grating delivers the distinct

color components of light to a selected plane and is positioned substantially midway between the selected plane and the lens array.

[c12] 12. In an optical system having a focusing element for delivering separated color components of light to plural distinct regions of an imaging plane, the improvement comprising:

a diffractive color dispersing layer positioned between the focusing element and the imaging plane for aligning the color components of light along distinct, non-diverging paths.

[c13] 13. The system of claim 12 in which the focusing element includes a microlens array.

[c14] 14. The system of claim 13 in which the microlens array includes plural cylindrical lenses.

[c15] 15. The system of claim 12 in which the diffractive color dispersing layer aligns the color components of light to be normal to the imaging plane.

[c16] 16. The system of claim 12 in which the diffractive color dispersing layer includes a volumetric hologram.

[c17] 17. The system of claim 16 in which the diffractive color dispersing layer is isotropic and without optical power.

[c18] 18. The system of claim 12 in which the imaging plane is a transmissive type electronic display panel with pixel apertures in a stripe formation.

[c19] 19. The system of claim 12 further comprising a color divergence element that provides diverging color components of light to the focusing element.

[c20] 20. A telecentric color filtering method for providing telecentric color-filtered light to an imaging plane, comprising:
forming plural diverging color light components; and
directing the plural diverging color light components through a holographic grating to align the color light components along distinct, non-diverging

paths that are telecentric with respect to the imaging plane.

[c21] 21. The method of claim 20 further comprising directing the plural diverging color light components through a focusing element positioned before the holographic grating.

[c22] 22. The method of claim 21 in which the focusing element includes a lens array.

[c23] 23. The method of claim 20 in which forming the plural diverging color light components includes directing multi-color illumination light toward plural angularly inclined dichroic mirrors that provide color separation of the incident multi-color illumination light.

[c24] 24. The method of claim 20 in which forming the plural diverging color light components includes directing multi-color illumination light through a holographic grating for providing color separation of incident multi-color illumination light.